Claims 1-3, 5-10, 19-23, 25, 29, 30, 39-51, 57, 60-67, 87-93 and 102-110 stand rejected under 35 U.S.C. §103(a) as being obvious over Kondo, Yonehara, Matsushita or Sakaguchi in combination with Lindmayer. Claims 58 and 59 stand rejected under 35 U.S.C. §103(a) as being obvious over Kondo, Yonehara, Matsushita or Sakaguchi in combination with Lindmayer and further in view of Hokuyou. Claims 11-18, 31-38 and 94-101 stand rejected under 35 U.S.C. §103(a) as being obvious over Kondo, Yonehara, Matsushita or Sakaguchi in combination with Lindmayer and further in view of Sullivan. Applicants respectfully traverse these rejections.

According to the methods of the present invention as now claimed in each of the independent claims, both first and second semiconductor layers are formed by liquid phase epitaxy under a reducing atmosphere. These critical features are neither disclosed nor suggested by any of the cited references. Accordingly, Applicants respectfully request withdrawal of the §103 rejections.

Claims 1-3, 5-8, 10-23, 25-67 and 82-110 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,190,937. Applicants respectfully traverse this rejection.

Applicant submits that the claims of the instant application and the claims of the '937 patent relate to independent and distinct inventions. As restated in General Foods Corp. v. Studiengesellschaft Kohle, 972 F.2d 1272 (CAFC 1992), a determination of obviousness-type double patenting involves a two step inquiry: (1) "Is the same invention being claimed twice?"; if the answer is "no", (2) "Does any claim in the application define merely an obvious variation of an invention being claimed in the patent asserted as

supporting double patenting?". If the answer to the second inquiry is "no", there is no double patenting. In the present instance, the answer to both questions is "no".

The same invention is not being claimed twice. According to the methods of the present invention, both first and second semiconductor layers are formed by liquid phase growth. On the other hand, according to the '937 patent, a first semiconductor layer is formed by vapor phase growth and a second semiconductor layer is formed by liquid phase growth. Clearly, the present claims and those of the '937 patent relate to different inventions.

Further, the basic policy behind the double patenting doctrine is the prevention of the unlawful extension of the patent grant. Applicant submits that the grant of a patent for the present invention will not result in any such monopoly extension. The application that matured into the '937 patent was filed on December 29, 1997. Thus, the term of the '937 patent will extend for a maximum of 20 years from that filing date. Because the present application has the same effective filing date as it is a division of the application that matured into the '937 patent, the term of any patent granted on this application will also extend for a maximum of 20 years from December 29, 1997. There will be no extension of the "right to exclude" if a patent is granted on the present application, as both the '937 patent and any patent issuing from the present application would expire simultaneously.

In sum, the present invention claims a different invention from the '937 patent, and the fundamental policy behind double patenting doctrine is not compromised. Accordingly, Applicants respectfully request withdrawal of the double patenting rejection.

In view of the foregoing amendments and remarks, favorable reconsideration and passage to issue of the present case is respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

Attorney for Applicants

Registration No. 42,667

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

VERSION SHOWING CHANGES TO CLAIMS

1. (Twice Amended) A method of producing a semiconductor member comprising the steps of:

forming a porous layer in a surface region of a first substrate;

forming a first semiconductor layer on the porous layer by liquid phase epitaxy using a melting solution in which elements for forming the first semiconductor layer to be grown are dissolved up to a supersaturated state or a substantially supersaturated state under a reducing atmosphere;

forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

bonding [a second substrate to a surface of the semiconductor layer opposite to a semiconductor layer surface bonded to the first substrate] the first substrate to a second substrate to obtain a multiple layer structure with the second semiconductor layer positioned inside; and

separating the first substrate from the [semiconductor] multiple layer structure by utilizing the porous layer to transfer the first and second semiconductor [layer] layers to the second substrate.

3. (Amended) A method according to claim 1, further comprising a step of removing the porous layer remaining on the surface of the first substrate after the first substrate is separated from the [semiconductor] multiple layer structure.

6. (Amended) A method according to claim 1, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first or second semiconductor layer to be grown are dissolved is brought in contact with the porous layer.

7. (Amended) A method according to claim1, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first or second semiconductor layer to be grown are dissolved is brought in contact with an epitaxial layer formed on the porous layer.

13. (Amended) A method according to claim 1, further comprising a step of providing a third substrate on a separate surface for transferring the first and second semiconductor [layer] layers to the second substrate.

14. (Amended) A method according to claim 13, further comprising a step of separating the second substrate to transfer the first and second semiconductor [layer] layers onto the third substrate.

21. (Twice Amended) A method of producing a solar cell comprising the steps of:

forming a porous layer in a surface region of a first substrate;

forming a first semiconductor layer on the porous layer by liquid phase epitaxy using a melting solution in which elements for forming the first semiconductor layer to be grown are dissolved up to a supersaturated state or a substantially supersaturated state under a reducing atmosphere;

forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

bonding [a second substrate to a surface of the semiconductor layer opposite to a semiconductor layer surface bonded to] the first substrate to a second substrate to obtain a multiple layer structure with the second semiconductor layer positioned inside; and

separating the first substrate from the multiple [semiconductor] layer structure by utilizing the porous layer to transfer the first and second semiconductor [layer] layers to the second substrate.

23. (Amended) A method according to claim 21, further comprising a step of removing the porous layer remaining on the surface of the first substrate after the first substrate is separated from the first and second semiconductor [layer] layers.

26. (Amended) A method according to claim 21, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first semiconductor layer to be grown are dissolved is brought in contact with the porous layer.

27. (Amended) A method according to claim 21, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the second semiconductor layer to be grown are dissolved is brought in contact with an epitaxial layer formed on the porous layer.

29. (Twice Amended) A method of producing a solar cell comprising the steps of:

forming a porous layer in a surface region of a first substrate;

forming a first semiconductor layer on the porous layer by liquid phase epitaxy under a reducing atmosphere;

forming a second semiconductor layer on the first semiconductor layer by liquid phase epitaxy;

bonding [a second substrate to a surface of the semiconductor layer opposite to a semiconductor layer surface bonded to] the first substrate to a second substrate to obtain a multiple layer structure with the second semiconductor layer positioned inside; and

separating the first substrate from the [semiconductor] multiple layer structure by utilizing the porous layer to transfer the first and second semiconductor [layer] layers to the second substrate;

wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first semiconductor layer to be grown are dissolved up to a desired concentration is used and the melting solution is brought in contact with a surface of the porous layer while a surface temperature of the porous layer is made lower than a temperature at which elements in the melting solution having the desired concentration are saturated.

33. (Amended) A method according to claim 21, further comprising a step of providing a third substrate on a separate surface for transferring the first and second semiconductor [layer] layers onto the second substrate.

34. (Twice Amended) A method according to claim 33, further comprising a step of separating the second substrate to transfer the first and second semiconductor [layer] layers onto the third substrate.

52. (Amended) A method of producing a semiconductor member[, the method] comprising the steps of:

(a) forming a porous layer in a surface region of a first substrate;

(b-1) immersing the porous layer into a melting solution in which elements for forming a first semiconductor layer to be grown is dissolved up to a supersaturated state or a substantially supersaturated state under a reducing atmosphere to grow [a] the first semiconductor layer on a surface of the porous layer;

(b-2) forming a second semiconductor layer by liquid phase epitaxy;

(c) bonding a second substrate onto a surface side of the first substrate on which at least the porous layer and the first semiconductor layer are formed; and

(d) separating the first substrate from the second substrate at the porous layer to transfer the first and second semiconductor [layer] layers separated from the first substrate to the second substrate.

57. (Amended) A method of producing a semiconductor member[, the method] comprising the steps of:

(a) forming a porous layer in a surface region of a first substrate;

(b-1) immersing, into a melting solution in which elements for forming a first semiconductor layer to be grown is dissolved up to a desired concentration, the porous layer whose surface temperature is made lower than a temperature at which the melting solution having the desired concentration is saturated, to grow [a] the first semiconductor layer on a surface of the porous layer under a reducing atmosphere;

(b-2) forming a second semiconductor layer by liquid phase epitaxy;

(c) bonding a second substrate onto a surface side of the first substrate on which at least the porous layer and the first semiconductor layer are formed; and

(d) separating the first substrate from the second substrate at the porous layer to transfer the first and second semiconductor [layer] layers separated from the first substrate to the second substrate.

88. (Amended) A method according to claim 29, further comprising a step of removing the porous layer remaining on the surface of the first substrate after the first substrate is separated from the transferred semiconductor [layer] layers.

89. (Amended) A method according to claim 29, wherein the liquid phase epitaxy is conducted under a reducing atmosphere comprising hydrogen gas.

90. (Amended) A method according to claim 29, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first or second semiconductor layer to be grown are dissolved is brought in contact with the porous layer.

91. (Amended) A method according to claim 29, wherein the liquid phase epitaxy includes that a melting solution in which elements for forming the first or second semiconductor layer to be grown are dissolved is brought in contact with an epitaxial layer formed on the porous layer.